EXAMINER'S AMENDMENT

1. An examiner's amendment to the record appears below. Should the changes and/or additions be unacceptable to applicant, an amendment may be filed as provided by 37 CFR 1.312. To ensure consideration of such an amendment, it MUST be submitted no later than the payment of the issue fee.

Authorization for this examiner's amendment was given in a telephone interview with Lilia Safonov on Feb. 18, 2010.

The application has been amended as follows: claims 15-23 have been cancelled.

Reasons For Allowance

2. The following is an examiner's statement of reasons for allowance:

Re claim 1, the prior art fails to teach an optical transmitting device of modulating an optical signal by a first signal and then by a second signal for transmission, the device comprises:

an optical splitting means for splitting the optical signal modulated by the first signal into split optical signals, the optical signal modulated by the first signal including one or more harmonic distortions of the first signal;

a cancellation signal generating means for generating a cancellation signal from one of the split optical signals, the cancellation signal including a frequency spectrum at least partially overlapped with a frequency spectrum of the second signal;

a combining means for combining the second signal with the cancellation signal; and

a modulating means for modulating the other of the split optical signals with the combined signal.

Farina (*US Patent 5,515,199)* discloses an optical transmission device of modulating an optical signal by a first signal, the device comprises:

an optical splitting means for splitting the optical signal modulated by the first signal into split optical signals *(the optical signal is input into a modulator 52 and is modulated with signals S in the main modulator, 54. The modulated main optical signal is split in the modulator into two parts and Output from the modulator)*, the optical signal modulated by the first signal including one or more harmonic distortions of the first signal *(the main optical signal contains all the components S and includes distortion, Fig. 5. Furthermore, the present system is drawn toward correcting harmonic distortions, therefore the distortion in the system comprises of harmonic distortion)*;

a cancellation signal generating means for generating a cancellation signal from one of the split optical signals *(the portion of the main modulated optical beam that is tapped is amplified to the delay and equalization circuit 68, and continues through a signal combiner and is eventually fed into correction modulator 54. The optical beams from the main modulator 52 and the correction modulator 54 and then combined at the final optical coupler 72 to achieve cancellation of nonlinear distortion products, Col. 8, lines 45-57)*

a modulating means for modulating the other of the split optical signals with the cancellation signal *(correction modulator 54, Fig. 5, outputs a modulated signal that was modulated by the electrical signal and phase shifted by delay element and is eventually coupled with*

the other split optical signal, which modulates the split optical signal. Therefore, the other split optical signal is modulated with a distortion canceling signal in the coupler which originates from the electrical signal).

However, **Farina** does not expressly teach:

the cancellation signal including a frequency spectrum at least partially overlapped with a frequency spectrum of the second signal;

a combining means for combining the second signal with the cancellation signal; and

a modulating means for modulating the other of the split optical signals with the cancellation signal.

Kochi *(Japanese Patent Publication 06-104867)* discloses an optical transmission device of modulating an optical by a first signal and then by a second transmission, the device comprises:

a modulating means for modulating the optical signal modulated by the first signal with a second optical signal *(plural optical modulators 2-1 to 2-n for performing light intensity modulation with electric signals from the corresponding signal order corresponding to the respective signal source 1-1 to 1-n are provided where the optical modulators are cascade arranged so as to successively from the light intensity modulation).*

However, **Kochi** does not expressly teach:

an optical splitting means for splitting the optical signal modulated by the first signal into split optical signals, the optical signal modulated by the first signal including one or more harmonic distortions of the first signal;

a cancellation signal generating means for generating a cancellation signal from one of the split optical signals, the cancellation signal including a frequency spectrum at least partially overlapped with a frequency spectrum of the second signal;

a combining means for combining the second signal with the cancellation signal; and

a modulating means for modulating the other of the split optical signals with the combined signal.

Re claim 8, prior art fails an optical transmitting method for modulating an optical signal by a first signal and then by a second signal for transmission, the method comprises:

splitting the optical signal modulated by the first signal into split optical signals, the optical signal modulated by the first signal including one or more harmonic distortions of the first signal;

generating a cancellation signal from one of the split optical signals, the cancellation signal including a frequency spectrum at least partially overlapped with a frequency spectrum of the second signal;

combining the second signal with the cancellation signal; and

modulating the other of the split optical signals with the combined signal.

Farina (*US Patent 5,515,199*) discloses an optical transmission device of modulating an optical signal by a first signal, the device comprises:

splitting the optical signal modulated by the first signal into split optical signals *(the optical signal is input into a modulator 52 and is modulated with signals S in the main modulator, 54. The modulated main optical signal is split in the modulator into two parts and Output from the modulator)*, the optical signal modulated by the first signal including one or more harmonic distortions of the first signal *(the main optical signal contains all the components S and includes distortion, Fig. 5. Furthermore, the present system is drawn toward correcting harmonic distortions, therefore the distortion in the system comprises of harmonic distortion)*;

generating a cancellation signal from one of the split optical signals *(the portion of the main modulated optical beam that is tapped is amplified to the delay and equalization circuit 68, and continues through a signal combiner and is eventually fed into correction modulator 54. The optical beams from the main modulator 52 and the correction modulator 54 and then combined at the final optical coupler 72 to achieve cancellation of nonlinear distortion products, Col. 8, lines 45-57)*

modulating the other of the split optical signals with the cancellation signal*(correction modulator 54, Fig. 5, outputs a modulated signal that was modulated by the electrical signal and phase shifted by delay element and is eventually coupled with the other split optical signal, which modulates the split optical signal. Therefore, the other split optical signal is modulated with a distortion canceling signal in the coupler which originates from the electrical signal)*.

However, **Farina** does not expressly teach:

the cancellation signal including a frequency spectrum at least partially overlapped with a frequency spectrum of the second signal;

combining the second signal with the cancellation signal; and

modulating the other of the split optical signals with the combined signal.

Kochi *(Japanese Patent Publication 06-104867)* discloses an optical transmission device of modulating an optical by a first signal and then by a second transmission, the device comprises:

modulating the optical signal modulated by the first signal with a second optical signal *(plural optical modulators 2-1 to 2-n for performing light intensity modulation with electric signals from the corresponding signal order corresponding to the respective signal source 1-1 to 1-n are provided where the optical modulators are cascade arranged so as to successively from the light intensity modulation)*.

However, **Kochi** does not expressly teach:

splitting the optical signal modulated by the first signal into split optical signals, the optical signal modulated by the first signal including one or more harmonic distortions of the first signal;

generating a cancellation signal from one of the split optical signals, the cancellation signal including a frequency spectrum at least partially overlapped with a frequency spectrum of the second signal;

combining the second signal with the cancellation signal; and

modulating the other of the split optical signals with the combined signal.

3. The following patents and patent applications are cited to show the state of the art with respect to optical compensation or modulation with a second signal:

(US-5161044, US-5303393, US-5422681, US-5430568, US-5515199, US-5739934, US-5812297, US-6005701, US-6061161, US-6366712, US-20050239406, US-20050244155, US-7200399, US-20070212073, JP-3339031, JP-06-104867, JP-2001-015243).

Conclusion

Any comments considered necessary by applicant must be submitted no later than the payment of the issue fee and, to avoid processing delays, should preferably accompany the issue fee. Such submissions should be clearly labeled "Comments on Statement of Reasons for Allowance."

Any inquiry concerning this communication or earlier communications from the examiner should be directed to TANYA NGO whose telephone number is (571) 270-7488. The examiner can normally be reached on M - F from 9 am - 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Kenneth Vanderpuye can be reached on (571) 272-3078. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information

about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Ngo/
Feb. 18, 2010

/Kenneth N Vanderpuye/
Supervisory Patent Examiner, Art Unit 2613